Research Department
Federal Reserve
Bank of
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FRBSF Weekly Letter

Penalty Discount Rate: II

A number of economic policymakers and analysts have urged the Federal Reserve to maintain its discount rate (the rate it charges banks to borrow reserves) at a penalty level above the Federal funds rate (the cost of borrowing reserves in the private financial market). These analysts expect this approach to improve Federal Reserve monetary control, since borrowed reserves would be kept at low levels. This step consequently would prevent borrowed reserves, and therefore the money supply, from exacerbating inflation and business-cycle fluctuations. Our last *Weekly Letter* discussed these arguments as well as evidence of monetary-control errors occurring since October 1979, when the Fed began placing greater emphasis on bank reserves in the monetary-control process. This week we explain some of the disadvantages of a penalty discount rate for monetary control under present institutional arrangements.

Lagged reserve accounting

One institutional change required for a penalty rate is a switch from the Federal Reserve's lagged reserve-requirement rule to a system of contemporaneous reserve requirements. The lagged rule states that, in any given week, institutions with reservable deposits must hold reserves (as deposits at a Federal Reserve Bank or vault cash) in prescribed percentages of their various types of deposits outstanding *two weeks earlier*. This rule has been in effect since 1968, replacing the earlier system of contemporaneous reserve accounting, which required banks to hold reserves based on the *current week's* deposits.

To understand how reserve-requirement rules affect the choice of a discount-rate policy, we must understand how the Fed exercises control over the monetary aggregates. Through its rules, the Fed sets the dollar volume of reserve requirements equal to fixed percentages of the various types of deposits issued by depository institutions. Thus if the Fed fixes the quantity of total reserves available to the banking system, bank deposits can expand only to some fixed level. (By "bank," we mean all depository institutions with transaction accounts.) If deposits expanded beyond that fixed level, total reserve requirements would exceed the total quantity of reserves available to meet those requirements. Thus some individual banks would find themselves without enough reserves to meet their requirements. These banks would respond by bidding for reserves from other banks in the Federal-funds market, causing the funds rate to rise. That rate increase would induce banks to supply—and the public to demand—fewer deposits. At the appropriate funds rate, System-wide deposits and reserve requirements would fall enough to eliminate the System-wide reserve deficiency.

Under lagged accounting, the link between current deposits and required reserves is broken. Banks enter any given week with an unchangeable quantity of required reserves. Unless the Fed wanted to force some individual banks into a deficiency, it must provide the quantity of reserves needed by the banking system. Thus the Fed's supply of reserves must adjust to the banking system's demand.

Can the Fed use reserves to control the monetary aggregates under this system of accounting? The answer is yes under certain circumstances, which depend on the level of reserves which banks borrow from the Fed, and thus on discount-rate policy. The Fed has two basic methods of supplying reserves. The System supplies *nonborrowed* reserves when it purchases a Treasury bill or other security directly or indirectly from a bank, paying for the security with reserves (in the form of a deposit at the Fed). The Fed supplies *borrowed* reserves when it makes a loan to a depository institution at the discount rate. Banks are reluctant to borrow from the dis-

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count window, however. The Fed generally discourages such loans except in emergencies, and moreover, it imposes restrictions on the size and frequency of borrowing.

With banks reluctant to borrow, the Fed thus can restrict money growth by providing a larger proportion of banks' predetermined requirements through the discount window and a lower proportion through open-market operations. The Fed achieves a more expansionary policy by shifting the split more in favor of nonborrowed reserves. This approach to monetary control would obviously break down under a penalty discount rate, since borrowed reserves would always be nearly zero. As a consequence, the split between borrowed and nonborrowed reserves would always be set around 100-percent nonborrowed/zero-percent borrowed, and therefore could not be manipulated for monetary-control purposes.

Uniform reserve requirements

If lagged reserve requirements represent such a problem, why not switch simultaneously to both contemporaneous accounting and a penalty rate? For one reason, the switch in accounting rules would impose added costs on commercial banks. In addition, there would be technical monetary-control problems resulting from differences in reserve-requirement ratios on the various categories of bank deposits. Ideally, reserve requirements would be applied uniformly to all deposits included in the money-supply measure the Fed is most interested in controlling, and would be held at zero on the types of deposits the Fed is less interested in controlling.

Unfortunately, this is currently not the case. The Fed now pays most attention to M1-B—currency plus bank checking-account balances plus NOW and other interest-bearing checkable deposits. It imposes certain reserve-requirement ratios on checking accounts, graduated upward according to the volume of deposits, but imposes lower requirements on interest-bearing checkable deposits. (Furthermore, reserves are required against various types of time and savings deposits not included in M1-B.) As noted below, a new structure of reserve requirements is being phased in over the 1980-87 period, in line with the stipulations of the Monetary Control Act of 1980.

To achieve its M1-B targets, the Fed must provide a level of total reserves which satisfies the demand for required reserves to support the *target level* of M1-B, plus any excess reserves, plus any reserves needed to support deposits not included in M1-B. Choosing the appropriate reserves level for any monetary-control period requires forecasting the "multiplier" relationship between M1-B and total bank reserves. This in turn requires forecasting (1) the composition of M1-B with respect to NOW versus checking accounts, and checking accounts by size of bank, and (2) the levels of the various reservable deposits *not* included in M1-B.

Assume for example that the public decides to transfer funds from six-month money-market certificates (MMC) to passbook-savings accounts, neither of which are included in M1-B. Since the MMC has a lower reserve requirement than the passbook account, total reserves absorbed by non-M1-B deposits would rise—or the multiplier between M1-B and total reserves would fall. If the Fed did not anticipate the shift in deposit composition and did not provide the extra reserves, fewer reserves would be available to support M1-B. Some individual banks would find themselves with reserve deficiencies. They might try first to borrow reserves from other banks in the Federal-funds market. This would drive the funds rate up, causing M1-B to fall below target because of a decline in the money multiplier.

Discount-rate policy strongly affects the extent to which the funds rate would rise and M1-B would fall short of its target. First assume that the discount rate is held constant and at a below-market level. As the funds rate begins to rise relative to the discount rate, more and more banks will be induced to borrow extra reserves at the now relatively

less expensive discount rate. The increase in reserves will be used to satisfy the increased need for reserves caused by the shift in deposit composition and by the lower money multiplier. This increase in total reserves relative to their originally targeted path means a smaller decline in M1-B below its target level than would otherwise be the case. Thus the decline in the money multiplier caused by the deposit-composition shift is offset to some extent by an increase in total reserves relative to their original path—an amount provided through the discount window. Our last *Weekly Letter* showed that such offsets between multiplier errors and total reserve errors are quite important in practice.

If a penalty discount rate were maintained, the automatic stabilizer of M1-B around its target could not operate. With the discount rate always above the funds rate, borrowings from the discount window would be pegged at nearly zero levels. Thus the extra reserves necessary to stabilize M1-B would not be provided through the window.

Double-edged sword

The Fed's monetary control can be improved when shifts in deposit composition are automatically accommodated by borrowed reserves. This can be a double-edged sword, however. Borrowing also accommodates other factors which the Fed does not want to accommodate, such as a larger than desired change in GNP. For example, higher GNP causes the public's demand for money to rise. Banks' attempts to borrow the associated extra reserves in the Federal-funds market cause the funds rate to rise, inducing banks to borrow reserves instead at the discount window. The extra reserves support the increased deposits, and M1-B thus overshoots its target. Through this process, the Fed can inadvertently intensify business-cycle fluctuations by providing a higher money supply when income is rising.

The advisability of using a penalty discount rate under contemporaneous accounting thus depends on the relative predictability of factors the Fed needs to *accommodate* (i.e., deposit-composition shifts) versus those the Fed needs to *offset* (income and price movements), in order to achieve the desired amount of monetary control. A recent Federal Reserve study of the "New Monetary Control Procedures" indicates that a penalty discount rate would have a net disadvantage for monetary control under the current nonuniform structure of reserve requirements. One-month-ahead forecasts of the monetary aggregates from two widely different money market models (one developed at the Federal Reserve Bank of San Francisco and the other at the Federal Reserve Board) suggest that failure to use the discount window as a source of automatic changes in total reserves would have impaired monetary control over the October 1979–October 1980 period. Both sets of results included forecasts of composition shifts, which the Fed should accommodate, as well as income movements, which it should not—and thus both addressed the issue of relative predictability.

Monetary Control Act

The effectiveness of a penalty discount rate will be increased with the full implementation of the Monetary Control Act of 1980. This Act will make reserve requirements significantly more uniform. Bank and thrift-institution transaction accounts (checking plus interest-bearing checkable) over $25 million ultimately will have a uniform reserve requirement of 12 percent, while those under $25 million will have a 3-percent requirement. No reserve requirements will be imposed on time and savings deposits, except for nonpersonal time and Eurocurrency deposits.

Choosing the level of reserves necessary to hit a given M1-B target thus will rely less heavily on estimates of deposit-composition shifts than is required under current reserve-requirement rules. The new rules will not be completely phased-in until 1987, although most of the phase-in will be accomplished by 1983. Thus for the next few years, problems of predicting deposit composition will pose a serious obstacle to the implementation of a penalty discount rate.

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 10/21/81	Change from 10/14/81	Change from year ago Dollar	Change from year ago Percent
Loans (gross, adjusted) and investments*	153,036	− 87	10,641	7.5
Loans (gross, adjusted) — total#	132,143	− 95	11,807	9.8
Commercial and industrial	39,766	− 469	4,534	12.9
Real estate	54,929	140	5,858	11.9
Loans to individuals	23,162	− 2	− 691	− 2.9
Securities loans	1,661	151	476	40.2
U.S. Treasury securities*	5,585	13	− 1,093	− 16.4
Other securities*	15,308	− 5	− 69	− 0.4
Demand deposits — total#	39,391	−2,685	− 4,947	− 11.2
Demand deposits — adjusted	27,728	−1,974	− 5,575	− 16.7
Savings deposits — total	29,387	− 145	− 566	− 1.9
Time deposits — total#	85,751	− 327	20,433	31.3
Individuals, part. & corp.	77,917	− 295	21,324	37.7
(Large negotiable CD's)	33,409	− 456	8,985	36.8

Weekly Averages of Daily Figures	Week ended 10/21/81	Week ended 10/14/81	Comparable year-ago period
Member Bank Reserve Position			
Excess Reserves (+)/Deficiency (−)	47	81	44
Borrowings	9	13	146
Net free reserves (+)/Net borrowed(−)	39	68	− 101

* Excludes trading account securities.

Includes items not shown separately.

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